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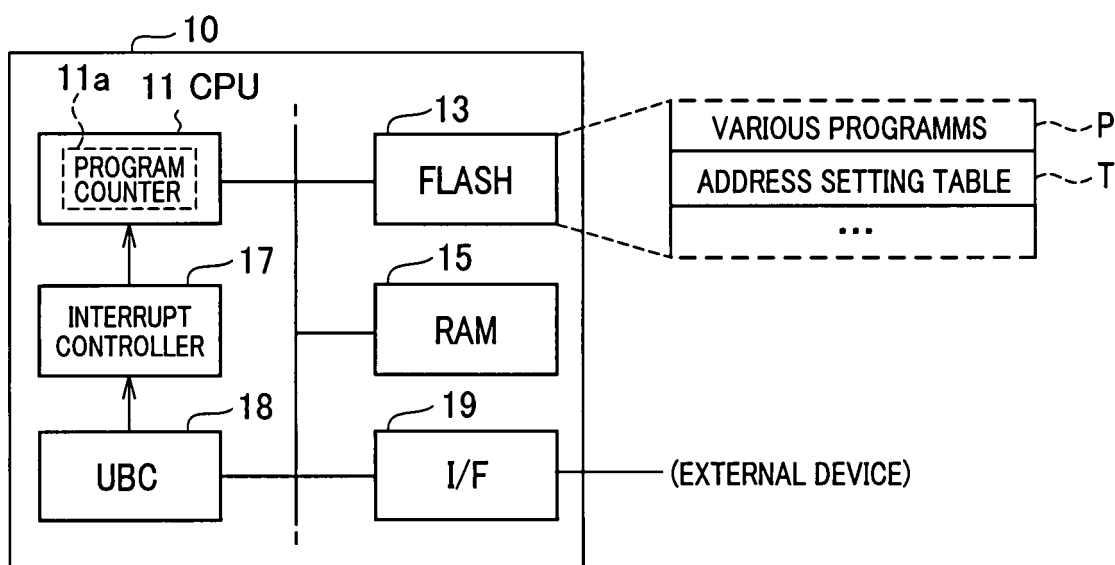
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(54) **System and program product for executing program to thereby test the program**

(57) In a system for carrying out a program to be tested, an interrupt generator is provided; this program includes a plurality of routines designed to be called and executed in a predetermined order. The interrupt generator generates an interrupt request every time one of the

plurality of routines is called. A determining unit is provided in the system. The determining unit determines whether a sequence of instructions in the program is normal based on historical information indicative of whether the interrupt request corresponding to at least one of the plurality of routines is generated.

FIG.1A





EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	"Secure Embedded Processing through Hardware-assisted Run-time Monitoring", PROCEEDINGS. DESIGN, AUTOMATION AND TEST IN EUROPE 7-11 MARCH 2005 MUNICH, GERMANY, 2005, pages 178-183, XP040015520, US	1-11, 15-17	INV. G06F11/36 G06F11/00
Y	* the whole document *	12-14, 18-20	
	& DATABASE INSPEC [Online] THE INSTITUTION OF ELECTRICAL ENGINEERS, STEVENAGE, GB; 2005, ARORA D ET AL: "Secure embedded processing through hardware-assisted run-time monitoring", Database accession no. 8371775 * abstract *		
X	----- LEAPHART E G ET AL: "Survey of Software Failsafe Techniques for Safety-Critical Automotive Applications", SAE TECHNICAL PAPER SERIES, SOCIETY OF AUTOMOTIVE ENGINEERS, WARRENDALE, PA, US, [Online] no. Paper No. 2005-01-0779, 11 April 2005 (2005-04-11), page 18PP, XP007909496, ISSN: 0148-7191 Retrieved from the Internet: URL:http://delphi.com/pdf/techpapers/2005-01-0779.pdf> [retrieved on 2009-08-13]	1,2,6, 15,16	TECHNICAL FIELDS SEARCHED (IPC) G06F
A	* Paragraph: Program Flow Monitoring; page 5 - page 6 * ----- -/--	3-5, 7-11,17	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 January 2011	Examiner Salsa, Francesco
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	US 2006/242517 A1 (PEDLEY CHRISTOPHER [GB] ET AL PEDLEY CHRISTOPHER [GB] ET AL) 26 October 2006 (2006-10-26) * abstract * * claim 1 *	12-14, 18-20	
A	----- PLATTNER B ET AL: "MONITORING PROGRAM EXECUTION: A SURVEY", COMPUTER, IEEE SERVICE CENTER, LOS ALAMITOS, CA, US, vol. 14, no. 11, 20 January 1982 (1982-01-20), pages 76-93, XP000743022, ISSN: 0018-9162	1-11, 15-17	
L	* the whole document *	1,12,15, 18	
A	----- "Error detection"; "Chapter 10" In: Kopetz, H: "Design Principles For Distributed Embedded Applications", 1997, Kluwer Academic Publishers, XP002619365, ISBN: 0792398947 pages 219-220, * paragraph [10.4.1] *	12-14, 18-20	
			TECHNICAL FIELDS SEARCHED (IPC)
4 The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 January 2011	Examiner Salsa, Francesco
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	COSTELLA J ET AL: "An instrument for concurrent program flow monitoring in microprocessor based systems", PROCEEDINGS OF THE INSTRUMENTATION AND MEASUREMENT TECHNOLOGY CONFERENCE. NEW YORK, MAY 12 - 14, 1992; [PROCEEDINGS OF THE INSTRUMENTATION AND MEASUREMENT TECHNOLOGY CONFERENCE], NEW YORK, IEEE, US LNKD- DOI:10.1109/IMTC.1992.245156, vol. -, 12 May 1992 (1992-05-12), pages 169-172, XP010063940, ISBN: 978-0-7803-0640-0 * the whole document *	1-11, 15-17	
A	CHODROW S E ET AL: "The sentry system", RELIABLE DISTRIBUTED SYSTEMS, 1992. PROCEEDINGS., 11TH SYMPOSIUM ON HOUSTON, TX, USA 5-7 OCT. 1992, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US LNKD- DOI:10.1109/RELDIS.1992.235122, 5 October 1992 (1992-10-05), pages 230-237, XP010029518, ISBN: 978-0-8186-2890-0 * paragraph [0001] - paragraph [0001] * ----- -/--	1-11, 15-17	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search The Hague		Date of completion of the search 31 January 2011	Examiner Salsa, Francesco
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EP 08 01 6145

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	RABEJAC C ET AL: "EXECUTABLE ASSERTIONS AND TIMED TRACES FOR ON-LINE SOFTWARE ERROR DETECTION", PROCEEDINGS OF THE 26TH. INTERNATIONAL SYMPOSIUM ON FAULT-TOLERANT COMPUTING. SENDAI, JP., JUNE 25 - 27, 1996; [PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON FAULT-TOLERANT COMPUTING], LOS ALAMITOS, IEEE COMP. SOC. PRESS, US LNKD- DOI:10.1109/FTCS.19, vol. CONF. 26, 25 June 1996 (1996-06-25), pages 138-147, XP000679278, ISBN: 978-0-8186-7261-3 * paragraph [0001] - paragraph [0003] *	1-11, 15-17	TECHNICAL FIELDS SEARCHED (IPC)
A	NOUBIR G ET AL: "ALGEBRAIC TECHNIQUES FOR THE OPTIMIZATION OF CONTROL FLOW CHECKING", PROCEEDINGS OF THE 26TH. INTERNATIONAL SYMPOSIUM ON FAULT-TOLERANT COMPUTING. SENDAI, JP., JUNE 25 - 27, 1996; [PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON FAULT-TOLERANT COMPUTING], LOS ALAMITOS, IEEE COMP. SOC. PRESS, US LNKD- DOI:10.1109/FTCS.19, vol. CONF. 26, 25 June 1996 (1996-06-25), pages 128-137, XP000679277, ISBN: 978-0-8186-7261-3 * paragraph [0001] - paragraph [0001] *	1-11, 15-17	
A	US 6 345 387 B1 (MORRISON GORDON E [US]) 5 February 2002 (2002-02-05) * the whole document *	1-11, 15-17	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 January 2011	Examiner Salsa, Francesco
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	MURPHY N: "Watchdog timers", INTERNET CITATION, November 2000 (2000-11), pages 1-5, XP002515047, Retrieved from the Internet: URL: http://www.eetindia.co.in/STATIC/PDF/200011/EEIOL_2000NOV04_EMS_TEST_INTD_TA.pdf?SOURCES=DOWNLOAD [retrieved on 2000-11-01] * the whole document * -----	6-14, 18-20	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
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Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-11, 15-17

Group 1: independent method claim 1 and the corresponding independent program claim 15 (together with the corresponding dependent claims 2-11 and 16-17) addressing the technical problem of how to determine if a sequence of instructions in a program is normal.

2. claims: 12-14, 18-20

Group 2: independent method claim 12 and the corresponding program claim 18 (together with the corresponding dependent claims 12-14 and 19-20) addressing the technical problem of how to determine if a particular routine is not carried out.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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31-01-2011

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 2006242517	A1	26-10-2006	GB	2425863 A	08-11-2006
			JP	2006309760 A	09-11-2006

US 6345387	B1	05-02-2002	NONE		
